SUMMIT
STUDY GUIDES

EPA 608

Universal Practice Test

Test 6

100 Questions • 25 per section

Universal: Core, Type I, Type II and Type III • Original practice questions

Written for the revised Section 608 question bank (from January 1, 2027) • Content current as of October 2026

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How to Use This Material

This test has 100 questions in the four sections of the Universal exam: Core, Type I, Type II and Type III, 25 questions each. Answer each question on your own first, choosing the single BEST answer. Each section is scored separately, and you need 18 of 25 (70%) to pass a section. Your certifying organization sets the time limit on exam day, so practice at a steady pace: about 30 minutes per section, or 2 hours for all 100 questions. Then check your work against the separate answer key, fill in the score sheet at the end of the key, and read every explanation, including for the questions you got right, because the reasoning is what transfers to new questions on exam day.

EPA 608 Universal Practice Test 6

100 questions • 4 sections of 25 • Answer key and explanations in the separate Answer Key file
Choose the single BEST answer for each question. Passing is 18 of 25 (70%) in each section. Suggested practice pace: about 30 minutes per section.

Section 1: Core Questions 1-25

1. A person is convicted a second time of knowingly violating the Section 608 rules. How do the criminal penalties change?

- **A.** They are capped at the sentence given for the first conviction
- **B.** They are reduced by half
- **C.** They are doubled for a repeat conviction
- **D.** They convert to civil penalties only

2. How is a disposable refrigerant cylinder marked?

- **A.** DOT-4BA
- **B.** DOT-4BW
- **C.** DOT-39 NRC
- **D.** DOT-2.2

3. In R-12 (CCl2F2), which bond does UV light break to release the atom that destroys ozone?

- **A.** A carbon-hydrogen bond
- **B.** A carbon-chlorine bond
- **C.** A chlorine-fluorine bond
- **D.** A carbon-fluorine bond

4. A condensing unit made in 2008 needs R-22 in 2026. Which source of R-22 is allowed?

- **A.** Newly produced R-22, because the unit predates January 1, 2010
- **B.** No R-22; the unit must be converted
- **C.** New R-22, until all HCFCs end in 2030
- **D.** Existing stock or recovered, recycled or reclaimed R-22

5. What must the certification label on recovery equipment show?

- **A.** That it was certified by an approved testing organization, plus its manufacture date and serial number
- **B.** That it was certified by the technician's certifying program, plus its hours of use
- **C.** That it was approved by EPA headquarters, plus the owner's name and technician card number
- **D.** That it passed the AHRI 700 purity test, plus its maximum cylinder fill weight

6. In 2026 an uncertified worker says he can recover R-410A because it is not an ozone-depleting substance. Is he right?

- **A.** Yes; HFC-only work needs only an employer-issued permit
- **B.** No; since Jan 1, 2018, certification covers HFCs too
- **C.** No; but only for systems of 50 lb or more
- **D.** Yes; certification covers only CFCs and HCFCs

7. Under §82.152, is connecting gauges and hoses to measure pressure considered 'opening' an appliance?

- **A.** Only if the gauges are left connected overnight
- **B.** Yes; any connection to a port is opening
- **C.** Only if the appliance holds more than 50 lb
- **D.** No; connecting hoses and gauges is not opening

8. Under the safe-disposal rule, who is the final processor?

- **A.** The last person in the disposal chain, such as a scrap recycler
- **B.** The appliance manufacturer that built the unit
- **C.** The EPA-certified reclaimer that later receives the refrigerant
- **D.** The first technician to recover the refrigerant

9. When using an electronic detector on a suspected leak, why should the technician also check below the suspected point?

- **A.** Refrigerant vapor is heavier than air and sinks
- **B.** The detector reads only below its own probe
- **C.** Refrigerant vapor is lighter than air and rises
- **D.** Oil traces always form above the leak

10. A coworker says that heavy smog is good news because the ground-level ozone will drift up and repair the ozone layer. How should you respond?

- **A.** Smog ozone rises and speeds up chlorine attack
- **B.** Smog ozone rises only during the winter months
- **C.** Smog ozone slowly rises and partly refills the thin layer
- **D.** Smog ozone does not rise to repair the layer

11. Which accessory sits in the suction line to keep liquid refrigerant from reaching the compressor?

- **A.** Moisture indicator
- **B.** Receiver
- **C.** Liquid-line filter-drier
- **D.** Accumulator

12. What is a de minimis release?

- **A.** Any release of less than 1 lb of refrigerant
- **B.** Any release of a refrigerant with low GWP
- **C.** A small release during good-faith recovery that follows the rules
- **D.** Any release made outdoors where ventilation disperses the refrigerant

13. During good-faith recovery with certified equipment, a small puff of R-134a escapes when a certified technician disconnects a hose fitted with a low-loss fitting. How is this treated?

- **A.** As a violation, unless reported to EPA
- **B.** As legal, because R-134a is exempt
- **C.** As a de minimis release, not a violation
- **D.** As a violation, because any release is illegal

14. How may a scrap recycler meet its duty to tell suppliers about refrigerant recovery?

- **A.** File a yearly list of its suppliers with EPA's regional office
- **B.** Post signs or send letters saying to recover before delivery
- **C.** Pay a deposit to suppliers for each unit delivered with its charge
- **D.** Require each supplier to show a Section 608 wallet card at the gate

15. A hardware store clerk says R-454B can be sold to anyone because it is low-GWP and contains no chlorine. Is the clerk right?

- **A.** No; R-454B is a non-exempt substitute and is restricted
- **B.** No; but only cylinders over 25 lb are restricted
- **C.** Yes; only ozone-depleting refrigerants are restricted
- **D.** Yes; A2L refrigerants are not covered by the sales rule at all

16. A hospital's in-house technician recovers R-134a from one of the hospital's chillers and wants to charge it into another chiller the hospital owns. What is required?

- **A.** Recycling and an AHRI 700 analysis
- **B.** Reclamation by an EPA-certified reclaimer
- **C.** Nothing more; same-owner reuse is allowed
- **D.** Written approval from EPA before reuse

17. Per pound, R-32 (GWP 675) has about what fraction of the GWP of R-410A (GWP 2,088)?

- **A.** About two-thirds
- **B.** About one-half
- **C.** About one-tenth
- **D.** About one-third

18. A technician plans to enter a basement flooded with refrigerant vapor wearing an air-purifying respirator. Why is this unsafe?

- **A.** It filters refrigerant only below 400 ppm
- **B.** It is safe only for A2L refrigerants
- **C.** It does not supply oxygen; entry requires an SCBA
- **D.** It is rated for ammonia, not fluorocarbons

19. After the vacuum pump is isolated, the micron reading rises quickly and then levels off. What is the most likely cause?

- **A.** Moisture still boiling off inside the system
- **B.** A micron gauge mounted too close to the vacuum pump
- **C.** A small leak admitting air from outside the system
- **D.** A system that is tight and dry

20. Which of these readings represents the deepest vacuum?

- **A.** 25 mm Hg absolute
- **B.** 28 in. Hg vacuum
- **C.** 0.5 psia
- **D.** 2,000 microns

21. Disposing of which appliance requires the technician to keep the 5-to-50 lb disposal records?

- **A.** A 3 lb window air conditioner
- **B.** A 5 lb self-contained freezer
- **C.** A 75 lb packaged chiller
- **D.** A 30 lb rooftop unit

22. What is the lower flammability limit (LFL) of a refrigerant?

- **A.** The lowest concentration in air that can burn
- **B.** The lowest temperature at which it can ignite
- **C.** The lowest pressure at which it can leak
- **D.** The slowest speed at which a flame can travel

23. A cylinder of R-402A is found in a shop. R-402A contains HCFC-22. How is it classified?

- **A.** As a non-exempt substitute, like an HFC
- **B.** As an exempt substitute in listed uses
- **C.** As Class II, following the R-22 rules
- **D.** As a Class I substance, like a CFC

24. Which refrigerant may be charged as either vapor or liquid?

- **A.** R-454B
- **B.** R-134a
- **C.** R-407C
- **D.** R-404A

25. Two unlabeled cylinders at a stable 70°F read 71 psig and 74 psig. What is the best conclusion?

- **A.** Same refrigerant in both; the fuller cylinder reads higher
- **B.** PT cannot tell R-134a from R-1234yf; check the label and use an identifier
- **C.** The 71 psig cylinder is nearly empty and the 74 psig one is full
- **D.** The 74 psig cylinder holds R-134a with a small amount of air

Section 2: Type I: Small Appliances Questions 26-50

26. Under industry and manufacturer practice, how full may a recovery cylinder be filled with recovered refrigerant?

- **A.** No more than 80% of its capacity by weight
- **B.** No more than 90% of its capacity by weight
- **C.** No more than 80% of its volume by sight
- **D.** Up to its full stamped water capacity

27. What is a common non-pressurized container used for small-appliance recovery?

- **A.** A refillable supply cylinder
- **B.** The appliance's own accumulator
- **C.** A recovery bag
- **D.** A DOT-39 disposable cylinder

28. A freezer has a seized compressor and a 6 oz charge. A 2014 system-dependent kit with both-side access recovers 4.5 oz. Which statement is correct?

- **A.** Met; a seized compressor waives the percentage
- **B.** Not met; 4.5 oz is 75%, short of 80% unless 4 in. Hg is reached
- **C.** Met; 4.5 oz is 75%, over the 70% required
- **D.** Not met; 4.5 oz is 75%, which falls short of the 90% that is required

29. Why must a refrigerator's refrigerant be fully recovered before a technician brazes on its tubing?

- **A.** Heated refrigerant forms toxic gases, and brazing a charged line is unsafe
- **B.** Refrigerant in the tube makes the braze joint stronger
- **C.** Brazing heat lowers the required recovery level
- **D.** EPA requires a nitrogen purge during brazing only when the refrigerant is a CFC

30. A packaged unit's nameplate lists a 7 kg charge (1 kg = 2.2 lb). May portable system-dependent equipment be used on it?

- **A.** No; 7 kg is over the 5 lb small-appliance limit
- **B.** No; 7 kg is about 15.4 lb, over the 15 lb limit
- **C.** Yes; the limit is 15 kg, not 15 lb
- **D.** Yes; 7 kg is about 12.6 lb, under the 15 lb limit

31. How does R-290's saturation pressure compare with R-22's at 100°F?

- **A.** About 1.7 times higher, like R-410A
- **B.** Somewhat higher: 195.9 psig versus 173.9 psig
- **C.** Somewhat lower: 173.9 psig versus 195.9 psig
- **D.** Much lower: 57.9 psig versus 195.9 psig

32. In the small-appliance recovery rule, "compressor runs" refers to which compressor?

- **A.** The appliance's own compressor
- **B.** The recovery machine's compressor
- **C.** Any compressor in the recovery setup
- **D.** The compressor on the test stand used to certify the machine

33. A self-contained commercial ice machine is charged with R-290. Which statement about the Section 608 venting prohibition is correct?

- **A.** R-290 is an exempt substitute in this end-use
- **B.** R-290 is exempt only when the charge is under 150 g
- **C.** R-290 is never exempt because it is an A3
- **D.** R-290 is exempt only in household refrigerators

34. Which description fits system-dependent recovery equipment?

- **A.** Equipment that may be used only on small appliances
- **B.** Equipment certified for use only on appliances whose compressors still run
- **C.** Equipment that requires the appliance's components to remove refrigerant
- **D.** Equipment with its own compressor and a pressurized tank

35. An appliance recycler recovers 400 lb of R-134a from scrapped refrigerators and wants to sell it to an HVAC contractor. What must happen first?

- **A.** It must pass through a filter-drier recycling unit
- **B.** It must be sorted so each cylinder holds one refrigerant
- **C.** It must be sold only to Type I certified technicians
- **D.** It must be reclaimed by an EPA-certified reclaimer

36. An R-134a refrigerator has sat unplugged at 70°F. A new piercing valve shows 0 psig. The PT chart lists 71.1 psig for R-134a at 70°F. What does this indicate?

- **A.** The unit is fully charged and ready for recovery
- **B.** The unit holds air and must be recovered before opening
- **C.** The unit is in a deep vacuum and the gauge is wrong
- **D.** The charge is gone or the valve did not pierce; do not start recovery

37. An uncertified scrap yard worker plans to cut the tubing of a charged refrigerator 'since it is being scrapped anyway.' What would that be?

- **A.** A knowing release that violates the venting prohibition
- **B.** A permitted act, because disposal workers are exempt
- **C.** A de minimis release that the rule allows during disposal
- **D.** A violation only if the refrigerant is a CFC

38. On a proctored Type I section, a candidate answers 17 of 25 questions correctly. What is the result?

- **A.** Passes; 17 of 25 rounds to 70%
- **B.** Fails; 70% requires 18 correct
- **C.** Passes; Type I needs only 60%
- **D.** Fails; on-site Type I needs 84%

39. Which decision depends on identifying the refrigerant before recovery begins?

- **A.** Whether the unit counts as a small appliance
- **B.** Whether a leak-repair plan must be prepared
- **C.** Whether flammable-rated recovery equipment is needed
- **D.** Whether the level is based on the appliance's age

40. An appliance's compressor is seized. What is true of recovering it with a self-contained machine?

- **A.** The machine may be used only if the appliance holds under 5 lb
- **B.** Its own compressor does the work; the appliance's is not needed
- **C.** The machine must discharge into a non-pressurized bag
- **D.** The appliance must be repaired first so that its compressor can run

41. A factory-sealed window air conditioner holding 1.8 lb of R-32 is being scrapped. Which statement is correct?

- **A.** R-32 is an exempt flammable, so it may be vented outdoors
- **B.** R-32 is not exempt, so recover it to the Type I levels
- **C.** R-32 has zero ODP, so no Section 608 recovery rule applies
- **D.** R-32 is an A2L, so recover it to the Type II 0 in. Hg level

42. After the required recovery level has been reached on a small appliance and a repair is made, what is the vacuum pump used for?

- **A.** Evacuating the system to remove air and moisture before charging
- **B.** Recovering the last 10% of the charge into a pressurized cylinder
- **C.** Testing whether the recovery cylinder can hold a deep vacuum
- **D.** Pulling refrigerant out of the oil and into the recovery tank

43. A hauler recovers refrigerant from a dehumidifier with a dead compressor before delivering it for scrap. The recovery machine was made in 2015. What level must be reached?

- **A.** 0 psig, the level used for disposal
- **B.** 80% of the charge or 4 in. Hg vacuum
- **C.** 90% of the charge or 4 in. Hg vacuum
- **D.** 100% of the charge, verified by weight

44. A technician recovers R-134a from a small appliance into a non-pressurized bag, then empties the bag outdoors behind the shop. Which statement is correct?

- **A.** Releasing recovered refrigerant is a knowing release
- **B.** The release is de minimis, since the bag is small
- **C.** The release is allowed after recovery is complete
- **D.** The release is allowed, since R-134a has zero ODP

45. Which item is part of the required disposal record for a technician who recovers refrigerant from appliances holding more than 5 lb and less than 50 lb?

- **A.** The appliance's serial and model numbers
- **B.** The owner's signature and phone number
- **C.** The recovery machine's serial number
- **D.** Monthly totals recovered, by refrigerant type

46. Why are access fittings needed on both sides when the compressor of a small appliance does not run?

- **A.** Refrigerant is trapped on both sides of the compressor
- **B.** The rule requires two access fittings on every small appliance
- **C.** Two fittings double the required recovery level
- **D.** The low side must vent while the high side recovers

47. A running R-290 reach-in has a low-side reading of 41 psig. What is its evaporator saturation temperature?

- **A.** About 0°F
- **B.** About 20°F
- **C.** About 40°F
- **D.** About 70°F

48. A technician will replace the seized compressor in an R-290 vending machine. Which practice should be followed before brazing in the new compressor?

- **A.** Leave a small R-290 holding charge so that air stays out
- **B.** Pressurize the circuit with compressed air to check for leaks
- **C.** Remove all of the R-290 and flow nitrogen through the tubing
- **D.** Recover 80% of the R-290 and braze with the rest in place

49. How should a newly installed piercing valve be leak-tested?

- **A.** Run the recovery machine and listen at the clamp
- **B.** Apply bubble solution or a suitable detector at the fitting
- **C.** Pressurize the appliance with oxygen and watch the gauge
- **D.** Heat the fitting and watch for oil at the gasket

50. Which of these room air conditioners is listed in the regulation as a small appliance type, provided it is factory sealed with 5 lb or less?

- **A.** A split-system central air conditioner
- **B.** A ductless mini-split heat pump
- **C.** A packaged terminal heat pump (PTHP)
- **D.** A ducted packaged rooftop heat pump

Section 3: Type II: High- and Medium-Pressure Appliances Questions 51-75

51. After installing a new split system's line set and before evacuating, what should the technician do to check the new joints?

- **A.** Charge the line set with R-410A and check with bubbles
- **B.** Release some refrigerant from the outdoor unit to test
- **C.** Evacuate first and skip the test if the vacuum holds
- **D.** Pressurize with dry nitrogen and leak-check the joints

52. An R-22 ice rink system (industrial process refrigeration) and an R-22 office chiller each hold 600 lb. Both are recovered with 2010 machines. What levels apply?

- **A.** 15 in. Hg for both
- **B.** 10 in. Hg for the chiller; 15 for the rink
- **C.** 10 in. Hg vacuum for both
- **D.** 4 in. Hg for both

53. A repair uncovers a 3 sq in. opening for two hours. No compressor, condenser, evaporator or auxiliary coil is removed. How is it classified?

- **A.** Non-major, because no oil is removed
- **B.** Major, because any opening over 1 hour counts
- **C.** Non-major, because the area is not over 4 sq in.
- **D.** Major, because the opening lasts over 15 minutes

54. For a medium-pressure appliance with a full charge of 200 lb or more, what does Table 1 require with recovery equipment made on or after Nov 15, 1993?

- **A.** 4 in. Hg vacuum
- **B.** 15 in. Hg vacuum
- **C.** 25 mm Hg absolute
- **D.** 10 in. Hg vacuum

55. A recovery machine's label shows it was manufactured in March 2008. Which test standard was it certified to?

- **A.** ARI 740-1995
- **B.** ARI 740-1993
- **C.** AHRI 740-2016
- **D.** AHRI 740-2016 plus UL 1963

56. A technician brazes near a leaking R-22 line and notices a sharp, choking smell. Which decomposition products can form?

- **A.** Nitrogen and oxygen, which are harmless
- **B.** Carbon dioxide and water vapor only
- **C.** Hydrochloric acid, hydrofluoric acid and phosgene
- **D.** Ozone and pure chlorine gas only

57. A 700 lb R-22 cold storage warehouse system exceeded its threshold and was repaired. How often must leak inspections be done?

- **A.** Once per calendar year, until 1 year with no exceedance
- **B.** Every 3 months, for as long as it remains in service
- **C.** Every month, until 12 consecutive months pass with no exceedance
- **D.** Every 3 months, until 4 quarters in a row with no exceedance

58. Two condensers are both condensing at 120°F, one on R-22 and one on R-410A. About how much higher is the R-410A head pressure?

- **A.** About 60 psi higher (320 vs 260 psig)
- **B.** About 260 psi higher (520 vs 260 psig)
- **C.** About 160 psi higher (419 vs 260 psig)
- **D.** About the same (both near 260 psig)

59. When starting a recovery job, which valve must be opened before the recovery machine is turned on?

- **A.** The manifold's center-hose valve to air
- **B.** The appliance's relief valve
- **C.** The vacuum pump's isolation valve
- **D.** The recovery cylinder's inlet valve

60. When an A2L system's refrigerant sensor detects a leak, what does mitigation usually consist of?

- **A.** Venting the charge outdoors through a relief valve
- **B.** Closing the supply dampers to contain the leak
- **C.** Sounding an alarm while the compressor keeps running
- **D.** Running the indoor blower to dilute the leak

61. A fitting is removed, uncovering exactly 4 sq in. of flow area for 30 minutes. No major component is removed. How is the job classified?

- **A.** Non-major, because the area must be more than 4 sq in.
- **B.** Non-major, because the time must be over 60 minutes
- **C.** Major, because 4 sq in. reaches the limit
- **D.** Major, because the opening lasts over 15 minutes

62. Which statement about A2L refrigerant sensors is correct?

- **A.** They are factory-calibrated and not field-adjustable
- **B.** They are needed only on systems holding over 50 lb
- **C.** They may be removed once the installation is complete
- **D.** They should be recalibrated in the field every year

63. A cold storage warehouse uses a 1,500 lb R-22 system to hold frozen food. Which leak-rate threshold applies?

- **A.** 10%, as an "all other appliances" system
- **B.** 35%, as a large commercial system
- **C.** 20%, as commercial refrigeration
- **D.** 30%, as industrial process refrigeration

64. An R-410A system has been off for hours in a 70°F space, and both gauges read about 201 psig. What does this show?

- **A.** Normal standing pressure for R-410A at 70°F
- **B.** Air in the system; R-410A should read 121 psig
- **C.** A failed compressor; the pressures should differ
- **D.** An overcharge; the unit holds too much refrigerant

65. Before recovering from an R-32 heat pump, how does a technician confirm the recovery machine is suitable?

- **A.** Check that it has a noncondensable purge
- **B.** Check that it was made after Nov 15, 1993
- **C.** Check that it has an oil-less compressor
- **D.** Check the label for an A2L or flammable listing

66. Partway through evacuating a heat pump, a helper wants to run the scroll compressor briefly to "pull out the last of the moisture." What should the technician say?

- **A.** Yes; running the compressor helps the pump reach 500 microns
- **B.** No; the compressor would push the moisture into the vacuum pump oil
- **C.** No; energizing a hermetic compressor in deep vacuum can damage it
- **D.** Yes, but only if the crankcase heater has been on for an hour

67. A recovery machine for non-flammable refrigerants was made in 2020. Which standard was it certified to?

- **A.** AHRI 740-2016
- **B.** ARI 740-1993
- **C.** AHRI 700-2016
- **D.** ARI 740-1995

68. A recovery cylinder holds 50 lb of R-410A when completely full by weight. Its tare weight is 22 lb. At what scale reading should recovery stop to stay within the 80% limit?

- **A.** 58 lb
- **B.** 72 lb
- **C.** 40 lb
- **D.** 62 lb

69. How must R-410A leave the cylinder when a system is being charged?

- **A.** As vapor first, then as liquid at the end
- **B.** As either, because it is a near-azeotrope
- **C.** As liquid, because it is a 400-series blend
- **D.** As vapor, because its glide is negligible

70. R-32 has a GWP of 675 and an ODP of zero. May a technician vent it during service?

- **A.** No, but only because A2L refrigerants are flammable
- **B.** Yes; only ozone-depleting refrigerants are covered
- **C.** No; it is a non-exempt substitute refrigerant
- **D.** Yes, when the amount released is under 5 lb

71. A recovery machine was manufactured in October 1993. It will be used on a 300 lb R-134a chiller before a major repair. What level is required?

- **A.** 15 in. Hg vacuum
- **B.** 4 in. Hg vacuum
- **C.** 10 in. Hg vacuum
- **D.** 0 in. Hg

72. A system needs 6.5 lb of refrigerant. The cylinder weighs 18.0 lb on the scale before charging. At what scale reading should the technician close the valve?

- **A.** 6.5 lb
- **B.** 24.5 lb
- **C.** 12.5 lb
- **D.** 11.5 lb

73. Under §82.152, a medium-pressure appliance uses a refrigerant whose liquid-phase saturation pressure at 104°F is:

- **A.** 170 to 355 psia
- **B.** 45 to 170 psia
- **C.** 45 to 170 psig
- **D.** 15 to 45 psia

74. A technician says a leaky R-22 system may be opened at 5 psig because it 'cannot hold a vacuum.' Is that correct?

- **A.** Yes; leaky appliances have no required level
- **B.** No; leaking parts must still reach 10 in. Hg
- **C.** Yes; leaky appliances use the 5 psig oil-change limit
- **D.** No; even leaking parts may never be above 0 psig

75. A 300 lb R-22 system is recovered with a 2015 machine. The gauge reaches 4 in. Hg vacuum and holds. May the technician open it for a major repair?

- **A.** No; it requires 15 in. Hg vacuum
- **B.** Yes; any vacuum below 0 psig is enough
- **C.** No; this row requires 10 in. Hg vacuum
- **D.** Yes; 4 in. Hg is the R-22 level

Section 4: Type III: Low-Pressure Appliances Questions 76-100

76. Why do chiller operators log purge run time or pump-out counts?

- **A.** So the purge can be shut off once the log fills
- **B.** Because EPA sets a maximum purge run time
- **C.** So a rise that signals a leak is easy to spot
- **D.** Because the log replaces annual leak inspections

77. On an in. Hg vacuum scale, what does a reading of 0 in. Hg mean?

- **A.** Atmospheric pressure, the same as 0 psig
- **B.** A perfect vacuum, the same as 0 psia
- **C.** About 25 mm Hg absolute
- **D.** About 14.7 in. Hg vacuum

78. R-514A, used in some low-pressure chillers, is an azeotrope. What does that mean in service?

- **A.** It is a lower-flammability blend in the A2L group
- **B.** It has a large glide and must be charged as liquid only
- **C.** It separates into its components whenever it leaks
- **D.** It behaves like a single refrigerant with no temperature glide

79. Which of these is least likely to be the first sign of a leak on a running R-11 chiller?

- **A.** A noticeable drop in refrigerant level
- **B.** Head pressure high for the condensing temperature
- **C.** Longer purge-unit run times
- **D.** Moisture appearing in the purge unit

80. A low-pressure chiller must be evacuated to 25 mm Hg absolute. What is that in microns?

- **A.** 25,000 microns
- **B.** 250,000 microns
- **C.** 2,500 microns
- **D.** 500 microns

81. An R-11 chiller being charged with vapor reads 18.6 in. Hg vacuum, which is about 30°F saturation. What should the technician do?

- **A.** Keep charging vapor; the saturation point is still below freezing
- **B.** Switch to liquid, because the reading is close enough to 16.9 in. Hg
- **C.** Stop charging and evacuate again, because the chiller holds air
- **D.** Switch to liquid and shut off the water pumps to save time

82. A building engineer with no 608 certification wants to attach gauges to an R-123 chiller to check its pressures. What is required?

- **A.** Nothing, because reading pressures does not count as servicing
- **B.** Core certification only, because no refrigerant is added
- **C.** Type III or Universal, since attaching gauges breaks circuit integrity
- **D.** Type II certification, because the chiller is a large commercial system

83. What is the 100-year GWP of R-123, as listed in the book's chiller refrigerant table?

- **A.** 4,750
- **B.** 77
- **C.** 1,430
- **D.** 4

84. During a leak test, a technician pressurizes an R-11 chiller with nitrogen to 20 psig, and the evaporator rupture disc bursts. What went wrong?

- **A.** He should have used compressed air for the test
- **B.** The disc was faulty, since it should have held at least 100 psig
- **C.** Nitrogen reacted with R-11 and raised the pressure
- **D.** He went past the 10 psig limit; the disc bursts near 15 psig

85. When is a repaired leak on an R-123 chiller presumed fixed under the leak-repair rule?

- **A.** When no refrigerant is added for 12 months after the repair
- **B.** When no refrigerant is added for 30 days after the repair
- **C.** When the purge unit runs less than it did before the repair
- **D.** When the chiller next passes its yearly maintenance check

86. In a typical centrifugal chiller, where does the condenser water come from?

- **A.** The chilled-water loop, through the condenser shell
- **B.** A cooling tower, through the condenser tubes
- **C.** City water, through the condenser shell
- **D.** The evaporator, through a shared water box

87. For R-11 and R-123 chillers, the regulation bars methods that require later purging when raising pressure for a non-major repair. Which method falls in that category?

- **A.** Circulating warm water
- **B.** Adding nitrogen
- **C.** Applying heater blankets
- **D.** Warming the machine room

88. During vapor charging, an R-123 chiller reaches 12 in. Hg vacuum. What does this mean for the charging procedure?

- **A.** The chiller is above 0 psig, so the purge must run first
- **B.** Saturation is above 40°F, so liquid charging may begin
- **C.** Saturation is below 0°F, so vapor charging must continue
- **D.** Saturation is near 32°F, so the water pumps can be shut off

89. The owner of a 500 lb R-11 comfort chiller has a technician add 10 lb. When must the owner calculate the leak rate?

- **A.** Every time refrigerant is added, including now
- **B.** Only when more than 10% of the charge is added
- **C.** Only when purge run time has gone up
- **D.** Once each calendar year, at year end

90. The condenser of an R-123 chiller is being removed. The technician isolates the condenser from the rest of the machine. To what level must the isolated condenser be evacuated?

- **A.** 10 in. Hg vacuum
- **B.** 15 in. Hg vacuum
- **C.** 25 mm Hg absolute
- **D.** 0 psig

91. Moisture keeps appearing in an R-123 chiller's purge unit, and the chilled-water system needs frequent makeup water. Which leak is most likely?

- **A.** A leaking condenser shell flange
- **B.** A leaking evaporator tube
- **C.** A leaking chilled-water pump seal
- **D.** A leaking evaporator rupture disc

92. A large R-123 release fills a machinery room, and no SCBA is available on site. What should the technician do?

- **A.** Enter quickly while holding his breath
- **B.** Enter wearing an air-purifying respirator
- **C.** Stay out, and ventilate the room
- **D.** Enter low, crawling below the vapor layer

93. Heavy purging leads an owner to add 60 lb to a 1,000 lb R-123 comfort chiller, 30 days after the last addition. Using the annualizing method, what follows?

- **A.** About 73%; repair within 120 days
- **B.** About 73%; repair within 30 days
- **C.** About 18%; no repair is required
- **D.** About 6%; no repair is required

94. After a leak on an R-11 chiller's evaporator is repaired, which change in purge behavior suggests the repair worked?

- **A.** Head pressure climbs above the PT value
- **B.** More moisture shows up in the purge tank
- **C.** Purge run time rises well above the earlier level
- **D.** Purge run time drops back toward its normal level

95. Why is a leak on a running low-pressure chiller often a bigger problem for refrigerant quality than for refrigerant quantity?

- **A.** It causes the refrigerant to fractionate
- **B.** It admits air and moisture that contaminate the charge
- **C.** It removes oil from the shell and leaves the refrigerant behind
- **D.** It releases only the purest refrigerant vapor

96. An R-11 chiller needs only an oil change, with no full evacuation planned. After warming, the shell reads 3 psig. May the oil be drained now?

- **A.** No; it must be brought to exactly 0 psig with nitrogen
- **B.** No; an oil change requires the shell to be in a vacuum
- **C.** No; the chiller must first reach 25 mm Hg absolute
- **D.** Yes; an oil change may be done at no higher than 5 psig

97. An R-123 chiller's condensing temperature is 100°F, but the condenser gauge reads 12 psig. What does this indicate?

- **A.** An undercharge, since the pressure should be about 15 psig
- **B.** Non-condensables, since R-123 at 100°F is about 6 psig
- **C.** A tube leak, since water raises the reading to about 12 psig
- **D.** A normal reading, since R-123 at 100°F is about 12 psig

98. To find refrigerant leaking from a tube into the water side, where is the detector probe inserted?

- **A.** Through the purge unit vent stub
- **B.** Through the rupture disc housing
- **C.** Through the evaporator charging valve
- **D.** Through the drain valve of the drained water box

99. After liquid has been transferred out of a chiller, why must the technician avoid trapping liquid between closed valves in the recovery hoses?

- **A.** Trapped liquid freezes the water in the chiller's tubes
- **B.** Trapped liquid is counted as a release under the leak rules
- **C.** Trapped liquid turns into a non-condensable as it warms
- **D.** Trapped liquid expands as it warms and can burst the hose

100. An R-123 chiller has reached 25 mm Hg absolute for a compressor replacement. What does the regulation require before the technician opens it?

- **A.** Wait 24 hours with the recovery unit running
- **B.** Fill the shell with nitrogen to 10 psig
- **C.** Notify EPA that the chiller is being opened
- **D.** Verify that the required level was reached